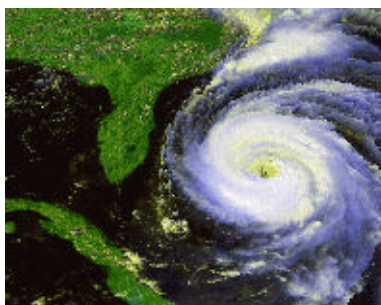


# Velocity

Motion can be measured by velocity and acceleration. **Velocity** is speed in a given direction. When you drive in a car, you read your speedometer to find out the car's speed. Speed is recorded in miles or kilometers per hour. In order to know the car's velocity, you must know the car's speed and you must also know what direction the car is traveling. So if you know your car is traveling north from Salt Lake City to Logan and your speedometer reads 75 miles per hour, then you also know your car's velocity.

On the weather channel a hurricane's path is explained in terms of velocity. People want to know how fast a hurricane is traveling but they also need to know in what direction it is traveling so they can evacuate if necessary. For instance, the weatherman will report a hurricane's velocity as five kilometers per hour moving in a northeasterly direction.

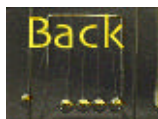


**Hurricane Fran off Florida 1996**  
(Courtesy NASA)

**Acceleration** is the rate of change in velocity. A roller coaster is constantly changing its velocity as it travels up and down and around. To calculate the acceleration of a roller coaster, divide the change in velocity by the time it takes the velocity to change.

$$\text{acceleration} = (\text{final velocity} - \text{original velocity}) / \text{time}$$

See if you can figure the following acceleration problem: A roller coaster's original velocity is 0 km/s and its final velocity is 30 km/s. The roller coaster ride takes 60 seconds to complete. Find the acceleration.



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Updated August 7, 2000 by: [Glen Westbrook](#)

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